



# Academy of Marketing Science

## **PRE-CONFERENCE WORKSHOP Partial Least Squares Structural Equation Modeling (PLS-SEM): Advanced Model and Results Assessment Criteria**

**2019 World Marketing Congress  
University of Edinburgh**



# Partial Least Squares Structural Equation Modeling (PLS-SEM): Advanced Model and Results Assessment Criteria

Tuesday, July 9, 2019, 11.00 a.m. – 4.30 p.m.

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Partial least squares structural equation modeling (PLS-SEM) has recently received considerable attention in a variety of disciplines, including

- marketing ([Hair et al 2011](#), according to Google scholar the most-cited article ever published in *Journal of Marketing Theory and Practice*; [Hair et al. 2012a](#), according to Google scholar the most-cited *Journal of the Academy of Marketing Science* article since 2012),
- strategic management ([Hair et al. 2012b](#), according to Google scholar the most-cited *Long Range Planning* article since 2012),
- management information systems ([Ringle et al. 2012](#), according to Google scholar the fifth-most cited *MIS Quarterly* article since 2012), and
- business administration in general ([Sarstedt et al. 2016](#), according to Google scholar the second-most cited article published in the *Journal of Business Research* since 2016).

Also, several review studies across different disciplines substantiate that PLS-SEM has become a standard method in the multivariate analysis toolbox: e.g., *Human Resource Management* ([Ringle et al., 2018](#)), *Hospitality Research* ([Ali et al., 2018](#)), *Information Systems Research* ([Hair et al., 2017](#)), *Management Accounting* ([Nitzl, 2016](#)), *International Business* ([Richter et al., 2016](#)), *Tourism* ([do Valle and Assaker, 2016](#)), *Psychology* ([Willaby et al., 2015](#)), *Supply Chain Management* ([Kaufmann and Gaeckler, 2015](#)), *Family Business* ([Sarstedt et al., 2014](#)), *Operations Management* ([Peng and Lai, 2012](#)), *Strategic Management* ([Hair et al., 2012](#)), *Marketing* ([Hair et al., 2012](#)), *Management Information Systems* ([Ringle et al., 2012](#)), *Accounting* ([Lee et al., 2011](#)), and *International Marketing* ([Henseler et al., 2009](#)).

PLS is a composite-based approach to SEM, which aims at maximizing the explained variance of dependent constructs in the path model. Compared to other SEM techniques, PLS-SEM allows researchers to estimate very complex models with many constructs and indicator variables. Furthermore, PLS-SEM permits to estimate reflective and formative constructs and generally offers much flexibility in terms of data requirements.

This pre-conference workshop focuses on recent advance in PLS-SEM. More specifically, we introduce new model assessment criteria that assist researchers in adequately evaluating and presenting their results. The course will cover the following state-of-the-art topics:

- Discriminant validity assessment by using the HTMT criterion
- Endogeneity assessment and how to resolve endogeneity issues in PLS-SEM
- PLS-SEM model fit criteria and explanatory model comparison
- Prediction-oriented assessment of PLS-SEM results and predictive model comparison

Practical applications and the use of the software program SmartPLS 3 are an integral part of the workshop. Each course participant will get a *free* two-months professional license of the SmartPLS 3 software.

**Place:** University of Edinburgh Business School, 29 Buccleuch Place, Edinburgh, EH8 9JS  
Conference Room & Roof Terrace

**Date:** Tuesday, July 9, 2019

**Time:** 11.00 am – 4.30 pm

**Cost:** AMS members: \$90 US; Non-members: \$290 US (includes AMS membership)

**Registration:** Participants need to register on the AMS website beginning December, 2018.

**Capacity:** 30 participants.

**Preliminary Schedule:**

Date	Time	Content
July 9, 2019 [TUE]	11:00 – 12:30	RECAP: Foundations of partial least squares structural equation modeling (PLS-SEM) & introduction to the SmartPLS software
	13:00 - 14:30	Discriminant validity assessment using the HTMT statistic, endogeneity in PLS-SEM & SmartPLS exercises
	15:00 - 16:30	New metrics for structural model assessment (model fit, model comparison, and PLSpredict) & SmartPLS exercises
	15:30 - 17:00	New metrics for structural model assessment (model fit, model comparison, and PLSpredict) & SmartPLS exercises

**Course set-up:** The workshop will introduce and explain the key concepts (i.e., why, when, and how to apply each criterion). In addition, most of the workshop will involve “hands-on” analysis of the dataset using the SmartPLS 3 software. The SmartPLS 3 software output diagnostics and interpretation of the results will be covered. Potential obstacles and “rules-of-thumb” to ensure appropriate application of the techniques will be addressed.

**Requirements:** Prior exposure to PLS-SEM is recommended but not required. In any case, we recommend the following PLS-SEM literature:

- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial Least Squares Structural Equation Modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of Market Research*. Heidelberg: Springer.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2nd ed.). Thousand Oaks, CA: Sage.
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2018). *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA: Sage.

Participants must bring a laptop computer with the SmartPLS 3 software readily installed. The software is available from <http://www.smartpls.com> (click on the “Download” button). Participants will receive the two-months license key to run the professional version of the software from the course organizers a few days before the course starts. This is an advanced workshop. Participants should have basic experience with PLS-SEM and the SmartPLS software.

**Who should attend?** Individuals wishing to learn more advanced PLS-SEM topics and the SmartPLS software for their PhD research and/or top-tier journal publications.

**Instructors:**

- *Joe Hair* is the Director of the DBA program and the Cleverdon Chair of Business at the University of South Alabama. He has authored over 50 books, including *Marketing*, Cengage Learning, 12th edition 2017; *Multivariate Data Analysis*, Prentice-Hall, 7th edition 2010 (cited 110,000+ times and is in the top five all time social sciences research methods textbooks); *Essentials of Business Research Methods*, Routledge, 3rd edition 2016; *Essentials of Marketing Research*, McGraw-Hill, 4th edition 2017; and *A Primer on Partial Least Squares Structural Equation Modeling*, Sage, 2nd edition 2017. He also has published numerous articles in scholarly journals such as the *Journal of Marketing Research*, *Journal of Academy of Marketing Science*, *Organizational Research Methods*, *Journal of Advertising Research*, *Journal of Business Research*, *Journal of Long Range Planning*, *Industrial Marketing Management*, *Journal of Retailing*, and others. His work has been cited more than 144,600 times in academic literature.  
More information: <http://www.southalabama.edu/colleges/mcob/marketing/hair.html>
- *Christian M. Ringle* is a Professor of Management and the Director of the Institute for Human Resource Management and Organizations at the Hamburg University of Technology (TUHH) and an Adjunct Professor of the Waikato Management School, New Zealand. He holds a PhD from the University of Hamburg, Faculty of Business and Economics. His research has been published in well-known journals such as *Information Systems Research (ISR)*, *International Journal of Research in Marketing (IJRM)*, *Journal of Business Research (JBR)*, *Journal of Service Research (JSR)*, *Journal of the Academy of Marketing Science (JAMS)*, *Long Range Planning (LRP)*, *MIS Quarterly (MISQ)*, and *Organizational Research Methods (ORM)*. Dr. Ringle co-authored the textbook on PLS-SEM and is co-founder of SmartPLS, a software tool with a graphical user interface for the application of the PLS-SEM method. More information: <https://www.tuhh.de/hrmo/team/prof-dr-c-m-ringle.html>
- *Marko Sarstedt* is a Professor of Marketing at the Otto-von-Guericke-University Magdeburg (Germany) and Adjunct Professor at the Monash University Malaysia (Malaysia). His main research interest is in the advancement of research methods to further the understanding of consumer behavior. His research has been published in journals such as *Journal of Marketing Research*, *Journal of the Academy of Marketing Science*, *Multivariate Behavioral Research*, *Decision Sciences*, *Journal of the Association for Information Systems*, *International Journal of Research in Marketing*, *MIS Quarterly*, *Organizational Research Methods*, *Journal of Business Research*, *Journal of Marketing Theory & Practice*, *Journal of World Business*, and *Long Range Planning*. Dr. Sarstedt has co-edited several special issues of leading journals and co-authored the textbook on PLS-SEM. More information: <http://www.marketing.ovgu.de>

## References and suggested readings:

- Dijkstra, T. K., & Henseler, J. (2015). Consistent and Asymptotically Normal PLS Estimators for Linear Structural Equations. *Computational Statistics & Data Analysis*, 81(1), 10-23.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (2 ed.). Thousand Oaks, CA: Sage.
- Hair, J. F., Sarstedt, M., Ringle, C. M., & Gudergan, S. P. (2018). *Advanced Issues in Partial Least Squares Structural Equation Modeling (PLS-SEM)*. Thousand Oaks, CA: Sage.
- Henseler, J., Dijkstra, T. K., Sarstedt, M., Ringle, C. M., Diamantopoulos, A., Straub, D. W., . . . Calantone, R. J. (2014). Common Beliefs and Reality about Partial Least Squares: Comments on Rönkkö & Evermann (2013). *Organizational Research Methods*, 17(2), 182-209.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A New Criterion for Assessing Discriminant Validity in Variance-based Structural Equation Modeling. *Journal of the Academy of Marketing Science*, 43(1), 115-135.
- Hult, G. T. M., Hair, J. F., Proksch, D., Sarstedt, M., Pinkwart, A., & Ringle, C. M. (2018). Addressing Endogeneity in International Marketing Applications of Partial Least Squares Structural Equation Modeling. *Journal of International Marketing*, 26(3), 1-21.
- Sarstedt, M., Ringle, C. M., & Hair, J. F. (2017). Partial Least Squares Structural Equation Modeling. In C. Homburg, M. Klarmann, & A. Vomberg (Eds.), *Handbook of Market Research*. Heidelberg: Springer.
- Sharma, P. N., Shmueli, G., Sarstedt, M., Danks, N., & Ray, S. (2019). Prediction-oriented Model Selection in Partial Least Squares Path Modeling. *Decision Sciences*, in press.
- Sharma, P. N., Shmueli, G., Sarstedt, M., & Thiele, K. O. (2019). PLS-based Model Selection: The Role of Alternative Explanations in MIS Research. *Journal of the Association for Information Systems*, in press.
- Shmueli, G., Ray, S., Velasquez Estrada, J. M., & Chatla, S. B. (2016). The Elephant in the Room: Evaluating the Predictive Performance of PLS Models. *Journal of Business Research*, 69(10), 4552-4564.